Reviewer's report

Title: Heritable patterns of tooth decay in the permanent dentition: Principal components and factor analyses

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Reviewer: Kai Yu

Reviewer's report:

In this manuscript, the authors explored the use of principal component analysis (PCA) and factor analysis (FA) for the identification of heritable novel teeth decay patterns. The paper is well written, and analyses were conducted appropriately. I have the following minor questions and comments:

1. Does the caries pattern change with age? If so, how does this affect the estimation of the heritability?

2. For the PCA, was it based on the covariance or correlation matrix? Do the two provide similar results?

3. According to the manuscript, among PCs, the most heritable features are PC1, PC5 and PC7. Among FACs, the most heritable features are FAC3 and FAC6. How do the correlations between those PCs and FACs look like?

4. For the PCA and FA analyses, the authors used 1071 subjects from different pedigrees. Ideally, a sample of unrelated subjects should be used for the PCA and FA analyses. Does the usage of correlated subjects (within the same pedigree) distort the PCA and FA analyses?

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests